REMARKS

Reconsideration is respectfully requested in view of Applicants Amendments and remarks herein.

Initially, the Examiner is respectfully requested to note the amendments made to the claims. These amendments are made so that claim 1 is generic to the embodiment of dependent claim 3, with clarification that when more than one refiner is used, the refiners, each followed by steam separation, are in series; that is, the refiner(s) are in total a single position in the claimed manufacturing process. See figure 1 of the drawing where two refiners are illustrated, being refiners 6 and 10, each followed by steam separation, as illustrated by cyclones 8 and 12. The reductive bleaching agent is added to the advancing pulp suspension between the most down stream refiner and the screening department, or as illustrated in Figure 1 between the exit from the second refiner 10 and screening department 19.

In the Office Action, claims 1-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Lowrie et al. in view of Madison et al. and Grimsley et al and West.

The Examiner submits that the primary reference of Lowrie et al in Figure 5 shows a process as claimed by Applicant, but wherein peroxide bleaching agent is added between the refiner and the screening department, instead of reductive bleaching agent, and apparently without teaching minimal access to oxygen during the bleaching nor bleaching under drastic conditions from the aspect of temperature and minimized oxygen access.

With respect to Lowrie et al., Figure 5, the Examiner submits that Lowrie teaches preheating and/or presteaming lingocellulose chips passed to refiner (412) and steam separator (418) and subsequent to steam separation is passed to a storage vessel (latency chest 446) and to

a screening department (454, sic 452), and wherein peroxide bleaching agent is added between the refiner and the screening department (452).

Lowrie Figure 5 can be read in conjunction with claim 1 of the Lowrie patent. In claim 1 of Lowrie patent, a process is set forth for improving the physical properties of two-stage refiner pulp in which wood chips are refined in a first stage, after which the refined fibers and fiber bundles are soaked in the peroxide bleach followed by decreasing and then increasing consistency of the fibers, finally followed by the second stage of refining. These two refining stages are illustrated by refiners (412) and (442) in Figure 5 of Lowrie, with the bleaching tower (423) being positioned between these two refiners along with other important stages in the Lowrie process, including the stages required for decreasing and increasing consistency. In contrast with Lowrie, in the presently claimed method, the lignocellulose material is not defibrated in two stages or positions, but only in one stage or position. The single stage or position of defibration carried out in the present invention can involve the use of more than one refiner, but when more than one refiner is used, refiners are in series, i.e., in direct contact with each other through intervening steam separation as shown in Figure 1 of the present application.

Next, and most important, the reductive bleaching agent is added after the most downstream refiner and not between refiners as in Lowrie. For example, in Figure 1 of the present application illustrating the use of two refiners, the bleaching agent is added downstream of second refiner 10, but prior to screening department 19. In contrast, in Lowrie, the bleaching agent, which of course is not a reductive bleaching agent, is added between the refiners (412) and (442).

There is no teaching or suggestion in Lowrie for using a one position refining process to manufacture bleached mechanical or chemithermomechnical pulp in which a reductive bleaching agent is used after the most downstream refiner of a one position refiner method, but prior to the screening department. There is no possible way how one skilled in the art could be led to the present method from the sequence set forth in Figure 5 of Lowrie.

Furthermore, the process of Figure 5 of Lowrie begins with refining, because it is a method for improving 2-stage refining of pulp, as opposed to the present invention wherein an overall method for manufacturing bleached mechanical and chemithermomechnical pulp is set forth, including all the important steps required in such methods, for example, as set forth in claim 1, the preheat or the chemical treatment, plus steam separation, all prior to the refining stage for converting the lignocellulose material to a pulp suspension, followed by the storage vessel and screening department.

In addition, the Examiner must also note that Lowrie utilizes a bleaching vessel or bleach tower 423, again, a completely different mode of adding bleaching agent in comparison to the present invention in which the reductive bleaching agent is added to the advancing pulp suspension without the use of any bleaching tower or like means.

Therefore, even apart from the significant difference between Lowrie and the present invention, involving the location of adding the bleaching agent, one can compare the details of Lowrie with the present invention and as a result reach the conclusion that there are very few if any similarities between Lowrie and the present invention. For example:

1) Lowrie et al use an oxidative bleaching agent in the form of any peroxide, while Applicant uses a reductive bleaching agent, like dithionite.

2) Lowrie et al need a tower or some vessel of some kind, while Applicant adds the reductive bleaching agent to the advancing pulp suspension without the use of any bleaching tower or like means.

3) This point is in some way connected to point 2) above of the reason that Lowrie bleaching time lies within the interval 30 to 120 minutes, i.e., a very long time, while in Applicants' method the bleaching time probably ranges from a time span of some seconds up to some minutes.

4) Lowrie's bleaching temperature can vary between 32°C and 96°C, while Applicant always uses the very high temperature that is given of the pulp manufacturing process and within that the defibration stage as such and lies somewhere within or in the nearness of 80°C to 95°C.

5) When using peroxide as a bleaching agent, air with its oxygen content doesn't disturb the bleaching process in any way and the oxygen can be a plus and enhance the bleaching of the pulp, while when using dithionite as a bleaching agent it is of importance to hold the oxygen away from the pulp.

In summary, Lowrie does not teach or suggest the manufacturing process of the present invention in which a one position refining sequence is carried out, with the bleaching agent, a reductive bleaching agent, being added to the advancing pulp suspension after the most down

stream refiner but prior to the screening department. Lowrie adds a different type of bleaching agent between refiners.

Since the basic sequence of the manufacturing method of the present invention is not taught or suggested by Lowrie, clearly, the present claims are patentable. The secondary references do not provide the deficiencies of Lowrie. Indeed, the secondary references, as discussed below, have been cited with respect to other aspects of Applicants' claims, and are not directed to the manufacturing sequence set forth in Applicants claims.

Madison is cited by the Examiner as disclosing a process similar to Lowrie wherein bleaching agent is added between the refiner (secondary refiner) and the screen, with a teaching that hydrosulfite bleaching agent could be used instead of peroxide bleaching agent. As a result, the Examiner believes it would be obvious to use hydrosulfite for the bleaching agent of Lowrie et al.

Of course, even if one skilled in the art, for reasons which are not apparent did substitute reductive bleaching agent for peroxide in Lowrie, still the present invention would not result because of the significance of the method distinctions discussed above, with respect to Lowrie and the present invention. However, a detailed review of Madison, as can be illustrated by the schematic of the drawing of Madison, shows that Madison has very little, if any, similarities to the present invention.

In the method of the present invention, as discussed above, there is only one position or only one stage for defibration of the wood and this work is done in one or more refiners very early in the process. In contrast, Madison uses three positions or stages for defibration of the

wood, starting with logs that are grinded in a grinder (which has nothing to do with the refiner), and produces a ground wood pulp suspension. As the Examiner will note, the process sequence of Madison begins with stock from a grinder which goes to screen. Of course, in the present invention were inserted, the bleaching agent is added prior to the screen so that if the method of the present invention were inserted in the flow scheme of Madison, it would seem that the bleaching agent would have been added to the advancing pulp suspension somewhere between the grinder and screen, which illustrates how irrelevant Madison is at the present invention.

However, if we go back to the pulp manufacturing method of Madison, grit is removed from the accepted pulp suspension, while the rejected pulp suspension is refined (in a refiner, which is common) and both those suspensions are transported to a storage vessel and then the pulp suspension is thickened to a pulp consistency of, for example, 15%. After that, sodium hydroxide in great amounts is added to the pulp suspension. After a retention time the pulp is defibrated in a second position by means of a refiner. After one more retention time, dilution and washing plus thickening, the pulp suspension is transported to a storage vessel (in a tower for example). From there the pulp suspension is transported to a third position for defibration in a second refiner. After that the finally defibrated pulp suspension is diluted and thereafter screened and cleaned and the finished pulp is obtained.

In column 2, lines 22-26, in the Madison patent description the following is stated:

"If it is desired to bleach the pulp the bleach or chemicals may be added along with the stock fed to the secondary refiner, or it may be

bleached with peroxide and/or hydrosulfites after the secondary refining stage by more common groundwood bleaching methods."

In the flow scheme of Madison, the bleach liquid is added directly to the secondary refiner. Also, a common bleaching method, if used after the secondary refiner, would involve the usual mixture and bleaching tower, but moreover, Madison similar to Lowrie, includes two positions or stages of refining, indeed with storage there between. In contrast, in the present invention where more than one refiner is used, it is used in series with a first refiner at a very early position in single refining position in the claimed pulp manufacturing process. In contrast, in the Madison process, the second refiner is situated close to the end of the flow scheme and therefore also at a late stage in the pulp manufacturing process of Madison, being used as a third defibrating apparatus after a first grinder and a primary refiner located between the grinder and the secondary refiner.

No artisan can combine Madison with Lowrie, because Lowrie uses a very early bleaching position, while Madison uses, if any, a very late bleaching position. Therefore the artisan is not interested in if Madison teaches that either a peroxide or hydrosulfite (dithionite) can be used for his very special mechanical pulp, in which method the most important things are that three defibration stages (starting with a grinder) are used and that a big charge of sodium hydroxide is added to the pulp suspension before the second defibration stage (primary refiner).

Since the process of Madison has nothing whatsoever to do with the process being claimed herein, Madison cannot provide any of the obvious and above discussed deficiencies of Lowrie.

Next, Grimsley is cited as teaching that when bleaching with hydrosulfites, access to oxygen should be minimized.

Certainly, it is correct that it is known that access of oxygen when bleaching pulp with, for example, dithionite is disadvantageous, but the conventional knowledge of limiting access of oxygen to dithionite, in itself, does not provide any of the significant method defects of Lowrie.

In Grimsley, expensive covers are applied to each bleaching tank and tower in order to limit access to oxygen, with additional piping to install an inner gas supply and delivery systems for building an enclosed hood for the press section of each paper machine and the like. This drastic solution of Grimsley is totally foreign to the present invention, in which the bleaching agent is added to the advancing pulp suspension, as opposed to the use of conventional mixers, and tanks or towers that are contemplated by Grimsley. Grimsley bears no relationship to the present invention.

Remaining reference to consider is West. West is cited as teaching bleaching pulp under drastic conditions and for adding a chelating agent just prior to the reducing agent.

In West, the bleach is added directly into the third refiner, as illustrated by items 35 and 34 in Figure 1 of West. The dithionite is added through the pipe 35 directly into the third refiner 34.

In the present invention, the dithionite is added downstream from the most downstream refiner. Indeed, in the present application, Applicants have described the type of bleaching of West, i.e., with addition of the bleaching agent directly into the refiner at the bottom of page 2 and the top of page 3 thereof. In particular, Applicants note in their application the two

drawbacks of scaling within the refiner and a tendency of corrosion damage when the bleaching agent is added to the refiner. This leads to bad refining and a shorter lifetime for the refiner. Certainly, West does describe drastic conditions of temperature, which temperature may be even too drastic. Also, Applicants acknowledge the method of adding chelating agents as in the present invention is not in itself new and certainly can be illustrated by West. Even so, West does not provide the obvious deficiencies of Lowrie as discussed above. In West, the bleach is added directly into the refiner.

In conclusion, Applicants respectfully request the Examiner to review the entire claim 1 as a method for manufacturing bleached mechanical and chemithermomechnical pulp. Applicants submit that the entire process of the claim must be looked at and it is not proper to jump from one pulp manufacturing method to a different pulp manufacturing method in order to attempt to pick out a stage here and a stage there for reconstructing the present invention in hindsight. The overall pulp manufacturing methods of the prior references are very different from that of the present invention and these differences have been pointed out above.

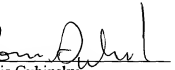
Clearly, Notice of Allowance is order.

If any minor points remain prior to Notice of Allowance, the Examiner is respectfully requested to contact the undersigned at the below listed phone number.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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